TO MARG:
COND. INFO.

United States
Department of
Agriculture

Forest Service

Northeastern Area

Gypsy Moth Defoliation
on the Allegany Indian
Reservation

Detection Survey

October 18, 1985

Prepared by : James T. O'Brien, Pathologist, Forest Pest Management,
USDA Forest Service, P.O. Box 640, Durham, NH 03824

ABSTRACT

Two surveys, an aerial "sketch map" reconnaisance and a 1:24,000 scale photographic survey, were conducted to detect 1985 gypsy moth defoliation on the Allegany Reservation, Seneca Nation of Indians, in New York.

The sketch map survey covered all but 800 of the approximately 10,500 acres of prime forest land. The photographic survey covered about 7100 acres (68 percent) of the 10,500 acres of the prime forest land. Of this, about 1900 acres judged moderately defoliated and 1100 acres heavily defoliated. Adding estimates from the sketch map survey for those areas not photographed brings the total to 4400 acres (1900 acres moderate; 2500 heavy), for prime forest land. If the estimates provided by the reconnaissance for the areas not photographed are added to those for which photographs are obtained, 8400 acres of the entire 20,000 acre Reservation were defoliated (3000 moderately; 5400 heavily). 3

About 4500 acres had been sprayed in Spring 1985. The photographic survey indicated about 350 acres of sprayed area were moderately-heavily defoliated, but no defoliation was noted during the sketch-map survey.

An egg mass survey in fall 1985 is needed on the entire prime forested area.

INTRODUCTION

The Allegany Reservation is one of three reservations owned by the Seneca Nation of Indians in western New York. The Allegany Reservation extends along the Allegheny River from the Pennsylvania border to Vandalia, New York, and includes the city of Salamanca. The Reservation comprises about 20,000 acres, of which three-fourths is forested. The forest land is managed for the benefit of the Seneca Nation, primarily for timber and wildlife. Among the forest tree species available for timber, oaks predominate. Gypsy moth (Lymantria dispar (L.)), a defoliator of oaks threatens to kill or injure the oaks, and thus disrupt the management of the timber.

Some gypsy moth defoliation occurred on the Reservation in 1984, and subsequently an egg mass survey (by Forecon Inc., a contractor) showed a potential for serious defoliation on most of the forested area in 1985. To prevent defoliation on about 4500 acres, the insecticide Sevin-4 oil was applied in the spring of 1985.

To estimate 1985 defoliation on the Reservation, an aerial photographic survey was planned. When it became apparent that weather conditions might preclude photography, an aerial reconnaissance was undertaken as a backup. In addition to defoliation estimates, the surveys allowed an evaluation of the spraying.

SURVEY METHODS

The aerial reconnaissance survey, during which defoliated areas were sketched on a map, was conducted on July 11, 1985 by Forest Pest Management personnel, Morgantown Field Office. This survey covered 9700 acres of prime forest land. (Herein, "prime forest land" is that included in blocks by Forecon, Inc. for their egg mass survey, plus the recently acquired area north of Red House Chapel). On July 19, 1985 most of the Reservation was photographed from an aircraft using color infra-red film (type 2443, 9" x 9" format, 8 1/2 focal length lens, scale 1:24000), by personnel of Region 8, USDA Forest Service. The photographs were interpreted (for degree of defoliation) August 12-16 and a brief ground check was made August 22-23. The photographic survey covered 7100 acres of prime forest land. For both surveys, only moderate (31-60 percent of foliage removed) and heavy (61 percent or more) defoliation were recorded.

RESULTS AND DISCUSSION

The results of the surveys for those areas designated "blocks" by Forecon, Inc. are shown in Table 1; the forested areas not in blocks in Table 2.

Due to adverse weather, not all the Reservation could be photographed. About 6300 acres, or 65 percent of the area in the blocks, were covered, plus the recently acquired 800 acre area north of Red House Chapel.

The photographic survey showed about 2900 acres were defoliated (1900 acres moderately and 1000 heavily) within 19 of the blocks (6 blocks were not photographed). An estimate of 1400 additional acres of heavy defoliation in the blocks not photographed was provided by the sketch map survey, thus our estimate for defoliation within the blocks is 4300 acres (1900 moderate; 2400 heavy).

The total area defoliated (area within blocks plus the area not within blocks) on the portion of the Reservation photo graphed was 6700 acres (3000 moderate; 3700 heavy). By adding the results of the sketch-map survey for those areas not photographed, our estimate is 8400 acres (3000 moderate; 5400 heavy).

Where both were conducted the two surveys were in rough agreement except for blocks 11, 17, and 19. 1/ Blocks 11 and 19 may have been overlooked during the sketch-map survey, and possibly shadows on the photographs made block 17 appear more heavily defoliated than it was. There was not sufficient time to examine block 17 on the ground. The estimates for the five areas that were examined on the ground were in agreement with the photo interpretation.

Of the prime forest land, about 46 percent was moderately to heavily defoliated (31-100%).

About 34 percent of the photographed area had been sprayed. With the apparent exception of block 17, none of the sprayed areas were defoliated in excess of 30 percent.

CONCLUSION

Defoliation is estimated at 4400 acres of the 10,500 acres prime forest land (1900 moderate; 2500 heavy). Defoliation on the entire 20,000 acre Reservation was 8400 acres (3000 moderate; 5400 heavy). Had there been no spraying, up to 80 percent of the area photographed would have been moderately-heavily defoliated rather than 46 percent.

The suppression effort should be considered highly successful. Nevertheless, sufficient numbers of gypsy moth may have survived to repopulate the sprayed areas and those, along with the areas not sprayed, will be surveyed for egg masses in October 1985. High numbers of egg masses were noted in the unsprayed areas that were examined on the ground.

1/ When aerial sketch-mapping, the observer's view of the terrain is rapidly changing while his eyes must move from ground to map and back again. There is little time for reflection or the detection of error. However, the observers view is undistorted. In contrast, photographs are stable, and may be interpreted in an unhurried manner, but the photographic process clouds and distorts our perception (objects in shadow are obscured, topographic relief is exaggerated, colors are not life-like). Assuming the aerial observer and photo interpreter have equivalent ability and experience, which survey mehtod is the more reliable is not certain, but here photography was chosen.

RECOMMENDATIONS

Deciduous trees usually do not die after a single years' defoliation, even a severe one. However, they may, and areas where heavy defolition has occurred should be peridoically examined for 2-3 years with the intention of salvage cutting if tree mortalily occurs. The areas with heavy to severe defoliation are plotted on maps 1-5.

Table 1. Areas within blocks surveyed for 1985 gypsy moth defoliation the percent sprayed, and defoliated acres by class on the Allegany Reservation, Seneca Indian Nation.

Block	Acres	Percent Sprayed	Acres defoliated by class 1/	
			Moderate	Heavy
1	539	100	0	0
2	72	0	0	29
3	106	40	0	0
4	130	0	0	50
5	337	15	168	33
6	293	0	135	75
7	312	0	40	118
8	323	0	109	108
9	465	0	94	322
10	452	0	242	210
11	159	0	141	18
12	514	45	144	0
13	522	50	87	8
14	486	85	56	0
15	197	70	27	4
16	114	0	51	14
17	500	70	248	97
18	151	100	25	0
19	565	0	325	30
20	1301	100	0	0
21	210	0	0	105
22	366	0	0	348
23	665	0	0	665
24	271	0	0	271
25	552	0	0	0
	9682	36	1892	2505

1/ Estimates for blocks 1-19 are from the photographic survey; 20-25 from the aerial reconnaissance.

Table 2. Areas not within blocks [1]/ surveyed for 1985 gypsy moth defoliation on the Allegany Reservation, Seneca Indian Nation.

	Photo Survey	
	Moderate	Heavy
Within Salamanca	204	193
North of Red House Chapel (800 acres)	0	0
Elsewhere-from photo survey	885	2564
-added from reconnaissance	0	262
Totals	1089	3019

[1]/ On the photographs 1001 acres were examined within Salamanca, 4305 acres elsewhere on the Reservation. The area included in the sketch-map survey was about the same within Salamanca, but the area elsewhere could not be determined.